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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,814	10/05/2001	Hyun-Woo Lee	678-752 (P9924)	6754
28249	7590	04/21/2006	EXAMINER	
DILWORTH & BARRESE, LLP 333 EARLE OVINGTON BLVD. UNIONDALE, NY 11553			LY, ANH VU H	
			ART UNIT	PAPER NUMBER
			2616	

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p>09/972,814</p>	<p>Applicant(s)</p> <p>LEE ET AL.</p>	
	<p>Examiner</p> <p>Anh-Vu H. Ly</p>	<p>Art Unit</p> <p>2616</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8,10-12,14,15,17,18,20-22,24,25,27,36 and 37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-8,10-12,14,15,17,18,20-22,24,25,27,36 and 37 is/are rejected.
- 7) ☒ Claim(s) 1-8,10-12,14,15,17,18,20-22,24,25,27,36 and 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| <p>1) <input type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date <u>January 31, 2006</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____.</p> |
|---|---|

DETAILED ACTION

Response to Amendment

1. This communication is in response to applicant's amendment filed January 31, 2006. Claims 1-8, 10-12, 14-15, 17-18, 20-22, 24-25, 27, and 36-37 are pending.

Claim Objections

2. Claims 1-8, 10-12, 14-15, 17-18, 20-22, 24-25, 27, and 36-37 are objected to because of the following informalities:

With respect to claim 1, in lines 2, 8-9, 12, and 14-16, the recitation "for transmitting", "for amplifying", "for generating", "for switching", or "for dividing" is not a positive limitation but only requires the ability to so perform. Therefore, it does not limit a claim to a particular structure and does not limit the scope of a claim or claim limitation.

With respect to claim 5, in lines 2 and 13-15, the recitation "for transmitting" or "for dividing" is not a positive limitation but only requires the ability to so perform. Therefore, it does not limit a claim to a particular structure and does not limit the scope of a claim or claim limitation. Further, in line 6, "the modulated radio signal" lacks antecedent basis.

With respect to claim 8, in lines 2, 10-11, 13, and 15-16, the recitation "for transmitting", "for amplifying", "for generating", "for switching", or "for dividing" is not a positive limitation but only requires the ability to so perform. Therefore, it does not limit a claim to a particular structure and does not limit the scope of a claim or claim limitation. Further, in lines 9 and 16, "the modulated radio signal" and "the frame" lack antecedent basis.

With respect to claim 18, in lines 2 and 15-16, the recitation "for transmitting" or "for dividing" is not a positive limitation but only requires the ability to so perform. Therefore, it

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does not limit a claim to a particular structure and does not limit the scope of a claim or claim limitation. Further, in lines 8 and 15, "the modulated radio signal" and "the frame" lack antecedent basis.

With respect to claim 36, in line 2, the recitation "for dividing" is not a positive limitation but only requires the ability to so perform. Therefore, it does not limit a claim to a particular structure and does not limit the scope of a claim or claim limitation.

With respect to claim 37, in line 1, "The transmission apparatus as claimed in claim 5" should be changed to --the transmission method as claimed in claim 5-- since claim 5 recites a method. Further, in line 2, the recitation "for dividing" is not a positive limitation but only requires the ability to so perform. Therefore, it does not limit a claim to a particular structure and does not limit the scope of a claim or claim limitation.

Other pending claims are automatically objected to as they depend upon objected independent claims 1, 5, 8, and 18. Appropriate correction is required.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 5-8, 10-12, 14-15, 17-18, 20-22, 24-25, 27, and 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art disclosed in the specification on pages 1-10 and Figs. 1-10 and further in view of Heikkinen (WO 95/32558) and further in view of Lamoureux et al (US Patent No. 6,330,458 B1). Hereinafter, referred to as APA, Heikkinen, and Lamoureux.

With respect to claims 1 and 5, APA discloses a transmission apparatus in a CDMA mobile communication system (Fig. 10) for transmitting a modulated radio signal using a plurality of antennas (Fig. 10, elements ANT1 and ANT2), the transmission apparatus comprising:

a power amplifier for amplifying the radio signal in a transmission period (Fig. 10, element 1026 or 1038);

APA does not disclose a controller for generating a switching control signal in a non-transmission period and a switch for switching the amplified radio signal from the power amplifier between a first and a second antenna in response to the switching control signal, wherein the non-transmission is a guard period in each time slot for dividing among the time slots of a frame associated with the radio signal, a guard period in each sub-frame for dividing among the sub-frames associated with the frame, or a guard period for dividing between uplink time slot and downlink time slot in the sub-frame.

Heikkinen discloses controller (Fig. 3, element 35) for generating a switching control signal associated with the radio signal amplified by the power amplifier (Fig. 3, element 32) and a switch (Fig. 3, element 33) for switching the amplified radio signal from the power amplifier

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between a first and a second antenna (Fig. 3, elements 34a, 34b, and 34c) in response to the switching control signal.

Neither APA nor Heikkinen disclose that the control signal is generated in a non-transmission period, such as in a guard period in each time slot. Lamoureux discloses that a control signal is generated in a guard period of time slots of a frame (col. 3, lines 2-3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of APA, Heikkinen, and Lamoureux, to generate the switching control signal in a guard period or a non-transmission period, thereby not interrupting data transmissions, to switch the amplified radio signal between a first antenna and a second antenna, to reduce internally generated heat in each antenna and to promote the endurance of each antenna.

With respect to claims 2, 6, 10, and 20, APA discloses a TSTD scheme (Fig. 10). APA does not disclose that wherein the controller generates the switching control signal in a guard period of the last time slot among the time slots of the frame. Lamoureux discloses that the controller generates the switching control signal in a guard period of the last time slot among the time slots of the frame associated with the radio signal amplified by the power amplifier (col. 3, lines 2-3, the switching between antenna elements occurs during the guard times of the time slots. Herein, the guard times can be any guard time of any time slots, including the first, second, third, etc... and last guard time of last time slot among the time slots). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include

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the feature of generating the control signal in a guard period of time slots in APA's system, as suggested by Lamoureux, to eliminate any disturbance to users data transmissions.

With respect to claims 3 and 7, APA discloses that wherein the guard period has a length of 96 chips (Fig. 1, GP has 96 chips).

With respect to claims 8 and 18, APA discloses a transmission apparatus (Fig. 10) in a CDMA mobile communication system for transmitting a modulated radio signal using a plurality of antennas (Fig. 10, elements ANT1 and ANT2), the transmission apparatus comprising:

a power amplifier for amplifying the radio signal in a transmission period (Fig. 10, element 1026 or 1038);

APA does not disclose a controller for generating a switching control signal in a non-transmission period and a switch for switching the amplified radio signal from the power amplifier between a first and a second antenna in response to the switching control signal, wherein the non-transmission period is a first guard period in each sub-frame for dividing among the sub-frames associated with a frame or a second guard period for dividing between the uplink time slot and downlink time slot in the sub-frame.

Heikkinen discloses controller (Fig. 3, element 35) for generating a switching control signal associated with the radio signal amplified by the power amplifier (Fig. 3, element 32) and a switch (Fig. 3, element 33) for switching the amplified radio signal from the power amplifier between a first and a second antenna (Fig. 3, elements 34a, 34b, and 34c) in response to the switching control signal.

Neither APA nor Heikkinen disclose that the switching control signal is generated in a non-transmission period such as a second guard period. Lamoureux discloses that a control signal is generated in a guard period of time slots of a frame (col. 3, lines 2-3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of APA, Heikkinen, and Lamoureux, to generate the switching control signal in a guard period or a non-transmission period, thereby not interrupting data transmissions, to switch the amplified radio signal between a first antenna and a second antenna, to reduce internally generated heat in each antenna and to promote the endurance of each antenna.

With respect to claims 11, APA discloses that wherein the first guard period has a length of 96 chips (Fig. 3, GP has a length of 96 chips).

With respect to claims 12 and 22, APA discloses that wherein the second guard period is a downlink non-transmission period of a sub-frame (Fig. 3, DwPTS).

With respect to claims 14 and 24, APA discloses that wherein the downlink non-transmission period is 875 usec (page 18, lines 16-18).

With respect to claims 15 and 25, APA discloses that wherein the second guard period is an uplink non-transmission period of the sub-frame (Fig. 3).

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With respect to claims 17 and 27, APA discloses that wherein the uplink non-transmission period is 825 usec (page 18, lines 21-22).

With respect to claim 21, APA discloses that wherein the first guard period has a length of 16 chips (Fig. 4, GP has a length of 16 chips).

With respect to claims 36 and 37, APA discloses a TSTD scheme (Fig. 10). APA does not disclose that wherein the guard period in each sub-frame for dividing among the sub-frames associated with a frame is a guard period of the last time slot among the time slots of the frame. Lamoureux discloses that the controller generates the switching control signal in a guard period of the last time slot among the time slots of the frame associated with the radio signal amplified by the power amplifier (col. 3, lines 2-3, the switching between antenna elements occurs during the guard times of the time slots. Herein, the guard times can be any guard time of any time slots, including the first, second, third, etc... and last guard time of last time slot among the time slots). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the feature of generating the control signal in a guard period of the last time slot among the time slots of the sub-frames in APA's system, as suggested by Lamoureux, to eliminate any disturbance to users data transmissions.

Allowable Subject Matter

5. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments filed January 31, 2006 have been fully considered but they are not persuasive.

Applicant argues in page 8 that the prior art fails to disclose that wherein the non-transmission period is a guard period in each time slot for dividing among the time slots of a frame associated with the radio signal, a guard period in each sub-frame for dividing among the sub-frames associated with the frame, or a guard period for dividing between uplink time slot and downlink time slot in the sub-frame.

Examiner respectfully disagrees. First of all, the newly added claimed limitation, as argued above, is an "OR" statement, therefore, it can be classified as a guard period in each time slot or a guard period in each sub-frame or a guard period. Further, as indicated in the objected independent claims, the recitation "for dividing" is not a positive limitation but only requires the ability to so perform. Therefore, it does not limit a claim to a particular structure and does not limit the scope of a claim or claim limitation. Therefore, during the prosecution, the examiner has chosen "a guard period in each time slot". Secondly, as clearly stated in the rejections of claims, Lamoureux discloses switching between antenna elements occurs during the guard times of the time slots (col. 3, lines 1-3). Thereby, the prior art has addressed all limitations as recited in the rejected claims.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh-Vu H. Ly whose telephone number is 571-272-3175. The examiner can normally be reached on Monday-Friday 7:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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